

REMARKS

Claims 1-2, 6-7, and 11-18 had been pending, claims 3-5 and 8-10 having been previously cancelled. In this paper, claims 1 and 6 have been amended to recite increasing the “gas phase rate” of the soil by “about two times.” Support for these amendments may be found at least in the specification at least at page 17, lines 1-19 and in Figure 5, as follows:

As shown in Fig. 5, whereas the gas phase rate decreased as the soil was mixed by agitation when no soil-improving materials were added, the gas phase rate that was merely 30% at first increased to 60% when the soil-improving materials were added.

In addition, claims 1, 2, 6 and 7 have been amended to delete the reference to the “MO7 strain” of microorganisms, and new dependent claims 19-22 added to recite “[the] method of claim [1, 2, 6 or 7] wherein the microbes comprise the MO7 strain.” Support for these amendments may be found at least in the specification at page 8, lines 15-18; page 11, lines 15-18; and page 16, lines 5-6.

Accordingly, these amendments are fully supported by the specification, and Applicants earnestly request their entry. With these amendments, claims 1-2, 6-7, and 11-22 are pending for examination in this application.

Rejection of claims 1-2, 6-7 and 11-18 under 35 U.S.C. § 103(a)

The Office rejected claims 1-2, 6-7, and 11-18 under 35 U.S.C. § 103(a) as being unpatentable over Rhykerd et al. (“Rhykerd”) and “Gardening Series” and in further view of Glaze et al. (U.S. Patent No. 5,593,888) (“Glaze”), and further in view of Numata et al. (U.S. Patent 6,171,844) (“Numata”). Action at page 2. The Office relies on Rhykerd for providing a method “including adding a gas phase rate increasing inorganic soil-improving material (vermiculite, page 281, 1st paragraph).” Action at page 3. Acknowledging that Rhykerd does not teach the use of either perlite or of microbes, the Office relies on Gardening Series for the

alleged teaching “that perlite is useful for high clay soils in place of vermiculite” and on Glaze for the alleged teaching of the addition of bacteria. Finally, acknowledging that Glaze does not teach the particular strain MO7, the Office relies on Numata for the “use of MO7 for degrading trichlorethylene in soil.”

Applicants respectfully traverse the rejection. Nonetheless, solely to expedite prosecution and without acquiescing to the rejection, Applicants have amended claims 1 and 6, upon which all the pending claims depend, to now recite the affirmative step of mixing the soil by agitation to cause an increase in the “gas phase rate of about two times.” To facilitate prosecution, Applicants will address the rejection as applied to the amended claims.

As recently set forth in the M.P.E.P. at § 2141 at page 2100-116, and in the “Examination Guidelines for Determining Obviousness in Light of the Supreme Court’s *KSR v. Teleflex Decision*,” 72 FR 57526-57535 published on October 10, 2007 (“Guidelines”), among the rationales to support a rejection under Section 103 “is that all claimed elements were known in the prior art....” Guidelines at 57529. Applicants respectfully assert that the Office has not demonstrated that “all claimed elements were known in the prior art.”

As noted above, according to the Office, Rhykerd “describes the method including adding a gas phase rate increasing inorganic soil-improving material (vermiculite, page 281, 1st paragraph).” Action at page 3. It is true that Rhykerd measured O₂ concentration, stating that “soil atmosphere samples were collected at 6, 12, 18, 24, and 30 weeks to determine O₂ concentrations in the treatments.” Page 281, left column, last paragraph. However, those measurements of O₂ concentration have no relationship whatsoever to gas phase rate in the soil. Instead, it appears that Rhykerd measured O₂ consumption as a measure of microbial oxygen

consumption rates and thereby microbial activity. For example, the Results and Discussion section notes that:

Nitrogen and oxygen consumption indicates high microbial activity in the soil. . . . [E]vidence of microbial activity included large consumption of N and depletion of oxygen.

Page 282, left column, paragraph bridging to right column. More particularly, it appears that the authors measured O₂ consumption to ensure that O₂ was not depleted, presumably to avoid reducing microbial activity and thereby reducing oil degradation.

Specifically, the authors expected that the treatments would “enhance degradation of oil primarily by promoting microbial activity through enhanced aeration” and that the enhanced aeration was accomplished by “promoting diffusion of oxygen into the containers.” Page 282, right column, second paragraph. Noting that “oil degradation is not reduced if O₂ concentrations exceed 10%,” the authors reported that:

Oxygen measurements in our experiments indicated that O₂ concentrations were above 17% (data not shown) in all treatments throughout the experiment.

Page 282, right column, paragraph bridging to page 283, left column. Thereafter, they postulated that the “oxygen concentrations would not have been limiting in this study” which, according to a mathematical model, would not have decreased below 15%. Page 282, left column, first paragraph. Thus, Rhykerd’s measurement of O₂ concentrations related only to microbial activity, not to the gas phase rate of the soil. And even if the O₂ concentration had a tangential relationship to the soil’s gas phase rate, Rhykerd suggested that there was no difference between treatment groups. As noted above, Rhykerd concluded that the O₂ concentrations were “above 17% in all treatments throughout the experiment.”

For the purposes of completeness, to the extent Rhykerd showed any effect of vermiculite on the O₂ consumption over any of the other agents, the authors suggested that the other agents, hay and sawdust, had a better effect on microbial activity. Specifically, the authors conducted a laboratory experiment on O₂ consumption (*see* section 2.3, Oxygen consumption due to bulking agents,") to determine whether the differences in bioremediation may be due to a difference in "priming effect on microbial populations." Page 283, right column, second paragraph. They concluded that "[i]n fact, the addition of vermiculite, which would not provide a carbon source, did not enhance O₂ consumption, while both hay and sawdust added to the soils greatly stimulated O₂ consumption." Page 283, right column, paragraph bridging to page 284. If anything, this experiment suggests that organic agents, such as hay and sawdust, enhance bioremediation through priming and providing a carbon source. This teaches away from the use of inorganic agents such as vermiculite and perlite.

For at least these reasons, Rhykerd does not teach or suggest the claimed element of increasing the "gas phase rate" of the soil by "about two times." None of the other articles provide any suggestion of a gas phase rate in the soil, let alone increasing it by two times. Accordingly, the combination of references simply cannot satisfy the requirement that "all claimed elements" were known in the prior art. *See* Guidelines at 57529.

Thus, Applicants respectfully request reconsideration and withdrawal of the rejection of claims 1-2, 6-7, and 11-18 under 35 U.S.C. § 103(a).

CONCLUSION

In view of the foregoing remarks, Applicants respectfully request reconsideration of the application and the timely allowance of the pending claims. With these amendments, Applicants submit that this application is in good condition for allowance. If the Examiner does not find the

claims allowable, the undersigned requests that, prior to taking action, the Examiner call her at (650) 849-6607 to set up an interview.

Please grant any extensions of time required to enter this response and charge any additional required fees to Deposit Account No. 06-0916.

Respectfully submitted,

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